(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
16 October 2003 (16.10.2003)

PCT

(10) International Publication Number
WO 03/084369 A1

(51) International Patent Classification⁷: A47D 11/00, A47C 27/08, B63C 9/04

(21) International Application Number: PCT/EP03/03391

(22) International Filing Date: 1 April 2003 (01.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PO2002A000009 4 April 2002 (04.04.2002) IT

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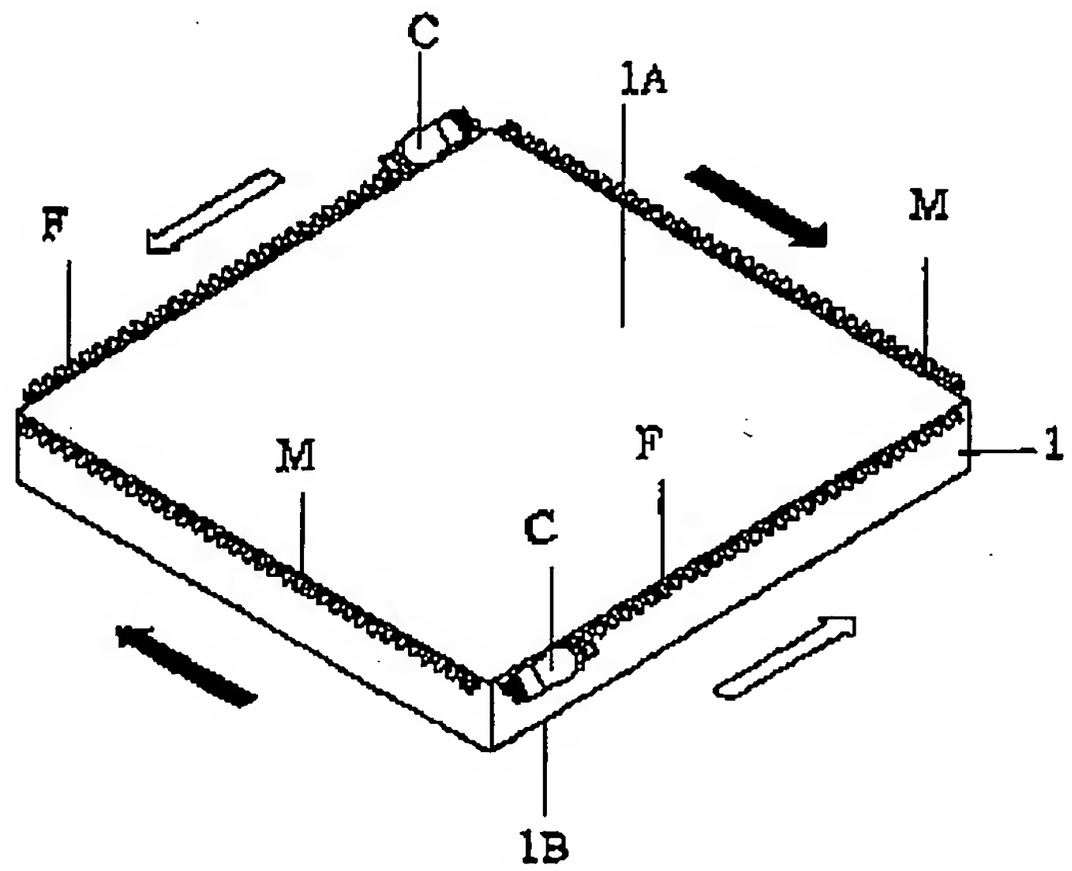
(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MODULARITY SYSTEM FOR PADDED OR INFLATABLE CUSHIONS



(57) Abstract: A modularity system for padded or inflatable cushions used to form flat or three-dimensional compositions, such as large padded surfaces for play and relaxation, playpens and enclosures for infants, containers for toys or other items, rafts for playing in the water and other structures for the most disparate purposes, comprising a base module being a square cushion (1) adapted, at or proximate to the perimeter of one of two square faces (1A, 1B), for hinge-like coupling with four cushions, one for each side, that are suitably shaped and equipped, are square and are each provided with four zip fastener halves, provides as female zip fasteners (F) and male zip fasteners (M) depending on whether they have the coupling slide (C) or not.

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MODULARITY SYSTEM FOR PADDED OR INFLATABLE CUSHIONS

Technical Field

The present invention relates to a modularity system for padded or inflatable cushions used to form flat or three-dimensional arrangements for the most disparate purposes, such as formation of playing or resting surfaces of indefinite extension, arrangements of padded playpens for infants, assembly of containers for toys or other items, and in the case of inflatable cushions, composition of mattresses, floating rafts and other similar structures.

Background Art

In practice, the cushions of the devised system, especially the padded ones, are similar to the cushions that are usually present in armchairs and sofas, where they are possibly retained by laces, buttons, Velcro and zip fasteners.

Known cushions systems are not suitable for versatile combinations.

Disclosure of the Invention

Therefore, an aim of the present invention is that of providing a combination system for cushions which is easy to carry out, economical, and can be made with means which are readily available on the market.

This aim is achieved by a modularity system for cushions, according to the present invention, having the features set forth in the claims.

The cushions of the new system are provided with zip fasteners, in a large number, since in each cushion there are at least four zip fasteners, whose function, not related to removal of the slipcover or with fixing to the armchair or sofa, is that of a coupling means selected to join the cushions directly to each other without the aid of additional elements.

Brief description of the Drawings

Further characteristics and advantages of the system according to the invention are described hereafter with the accompanying drawings, wherein by way of non-limitative example:

Figure 1, is a perspective view of a square cushion provided with zip fasteners that allow modularity according to the system of the present invention;

Figure 2, is a perspective view of a rectangular cushion whose dimensions are a multiple of those of the first cushion, said rectangular cushion being also equipped according to the system of the invention;

Figures 3, 4 and 5, are sequential and perspective views of the formation of a playpen for infants with square and rectangular cushions equipped according to the system of the invention;

Figures 6, 7 and 8, respectively illustrate a hexagonal cushion, an octagonal cushion and a square cushion, which can be combined with the first two because they are all equipped with suitable zip fasteners;

Figure 9, is a perspective view of the trihedral coupling of three square cushions equipped according to the system of the invention;

Figure 10, is a view of the trihedral composition of Figure 9 after overturning or turning inside out the cushions around the zip fasteners;

Figures 11, 12 and 13, are sequential side views of the coupling of two cushions with the zip fasteners applied halfway along their thickness, i.e., equidistantly from the two faces;

Figure 14, is a side view of a cushion provided with zip fasteners along the perimeter of both faces.

Ways of carrying out the Invention

To start the description of the modularity system according to the invention, it is necessary to note first of all that regardless of the type of zip fastener that in practice can be selected for mass-production, the zip fastener shown in the accompanying drawings is the most classic one, which is notoriously constituted by two rows of teeth, each of which protrudes from the edge of a tape of particularly strong fabric in order to be meshed by way of the sliding of a slide C that is stably engaged with the row of teeth F, which by convention is termed "female" herein and is flanked by a white

arrow orientated in the direction of the sliding of said slide, in order to engage it with the corresponding row of teeth M, termed "male" herein, which is flanked by a black arrow, which also indicates the engagement movement of the slide C.

The base module of the modularity system according to the invention, shown in Figure 1, is a square cushion 1, whose face 1A or 1B is provided at or proximate to the perimeter with hinge-like coupling means, such as two male zip fasteners M on two parallel sides and with two female zip fasteners F on the other two sides. Each one of said male zip fasteners M is orientated inversely with respect to the other one and so as to converge in a corner with one of the two female zip fasteners F, which are also orientated inversely to each other, since each one must converge in a corner with one of the two male zip fasteners M.

Therefore, regardless of the presence or not of zip fasteners and other means that allow removal of any slip cover, the male zip fasteners M and the female zip fasteners F run continuously along the perimeter of the face 1A so that they are alternated and have opposite engagement directions.

This applies also to the face 2A of the rectangular cushion 2 (Figure 2), whose dimensions are a multiple of those of the base model 1; said rectangular cushion has a total of three male zip fasteners and three female zip fasteners, since it has, on each of the two longer sides, a female zip fastener F and a male zip fastener M, both of which have the same length as the zip fasteners that are provided on the two shorter sides of the face 2A.

Accordingly, said rectangular cushion 2 can be considered and used in compositions as if it consisted of two ordinary square cushions 1 permanently joined to each other.

In some cases, in order to allow it to be stacked with the square cushions 1, the rectangular cushion 2 can be folded in half as if it consisted of two of said cushions joined along an edge or side of a face.

It is therefore possible to freely combine square cushions 1 and

rectangular cushions 2, which are foldable or not and have dimensions that are multiples of those of the first cushions, as shown by the sequence of Figures 3, 4 and 5, wherein the male and female connecting zip fasteners are illustrated schematically only by the black and white arrows orientated along the engagement direction of the corresponding slide.

By viewing this example one can understand how it is possible, when required, to use multiple folding and non-folding elements, even larger than the rectangular element 2, since it is sufficient for the male and the female zip fasteners, which in any case have the same length as those present in the base module, to run continuously and alternately along the perimeter of the assembly and to each have its engagement direction reversed with respect to the preceding zip fastener. The same rule applies for the production of special elements, such as the hexagon 3 of Figure 6, the octagon 4 of Figure 7, and any other polygonal shape with an even number of sides to which a corresponding number of modules 1 (Figure 8), even connected in succession to each other, are to be connected.

In any case, when the zip fasteners are applied along the edges of a face of the cushions, it is convenient to ensure that the grip portion G of the slide C is always directed toward the thickness, i.e. in the direction of the height of the cushion, away from its surface, and not toward the face that is adjacent to the zip fastener. This is done in order to avoid discomfort for the person who lies on said face and most of all to prevent, in playpens or enclosures for children, the possibility of disengaging the zip fasteners from the inside.

Furthermore, where necessary, the compositions of cushions provided according to the system of the invention can be turned inside out, as in Figures 9 and 10, so that the grip portions of the slides of the coupling zip fasteners MF remain concealed and even clamped by the compression to which the edges of the cushions are forced by said turning inside out.

Moreover, the zip fasteners might also be fixed halfway along the

thickness, i.e. the height of the cushions in padded cushions 5 (Figures 11-13), like the inflatable ones that are not shown here.

One of the advantages of such a refinement is the possibility to use equally either resting surface without in any case detecting the presence of the zip fasteners.

Furthermore, by folding at a corner, on one side or the other, the two coupled cushions (Figure 13), the zip fastener MF remains concealed in any case for the person who is located inside the resulting right angle.

The devised modularity system also includes a cushion such as the one designated by the reference numeral 6 in Figure 14, in which each of the two faces is provided with two male zip fasteners M and with two female zip fasteners F that are arranged and orientated as in the base model of Figure 1.

Such cushions 6 can be used as dividing elements or connecting elements of compositions that are formed, on either side, with cushions such as in Figure 1 or cushions whose dimensions are multiples thereof.

What has been described and illustrated does not exclude that the devised system, without altering the described overall characteristics, might be susceptible of further modifications and variations, which are still within the scope of the present patent and are useful for optimizing the pairing of the zip fasteners and of the cushions chosen in each instance for the industrial mass-production of modular elements for the most disparate uses. It is convenient to note, in this regard, that in addition to conventional padded cushions and to inflatable cushions of the aquatic or seaside type with which the more recent plastic zip fasteners might be associated, there are also modules in which rigid frames or surfaces are inserted and other modules in which the comfort of a layer of padding is combined with the practicality of an inner air-filled chamber by virtue of which the space occupation of the modules can be reduced significantly in order to facilitate their packaging, transport and storage.

The disclosures in Italian Patent Application No. FO2002A000009 from

which this application claims priority are incorporated herein by reference.

CLAIMS

1. A modularity system for padded or inflatable cushions used to form flat or three-dimensional compositions, such as large padded surfaces for play and relaxation, playpens and enclosures for infants, containers for toys or other items, rafts for playing in the water and other structures for the most disparate purposes, characterized in that comprises a base module being a square cushion (1) adapted, at or proximate to the perimeter of one of two square faces (1A, 1B), for hinge-like coupling with four cushions, one for each side, that are suitably shaped and equipped, are square and are each provided with four zip fastener halves, provided as female zip fasteners (F) and male zip fasteners (M) depending on whether they have the coupling slide (C) or not.

2. The modularity system according to claim 1, characterized in that the square cushion is provided with two male zip fasteners (M) on two parallel sides and with two female zip fasteners (F) on the other two sides, each male zip fastener (M) being furthermore orientated inversely with respect to the other and so as to converge in a corner with one of the two female zip fasteners (F), which are also orientated inversely with respect to each other.

3. The modularity system according to the preceding claims, characterized in that in rectangular cushions (2) whose dimensions are multiples of those of the base module and in cushions having any other polygonal shape with an even number of sides, the male zip fasteners (M) and the female zip fasteners (F), which all have the same length as those of the base module, run continuously along the perimeter in an alternating sequence and with opposite engagement directions.

4. The modularity system according to the preceding claims, characterized in that the female zip fasteners (F) are fixed so that the grip portion (G) for the actuation of the slider (C) is always directed toward the thickness of the cushion and away from the face that is adjacent of the zip fastener.

5. The modularity system according to claims 1, 2 and 3, characterized in that the zip fasteners (C) can be fixed halfway along the thickness of the cushions (1), or at any distance from the two faces (1A, 1B), provided that they are arranged parallel to said faces.

6. The modularity system according to claims 1 and 2, characterized in that each one of the two faces (2A, 2B) of a cushion (1) can be equipped perimetrically, as in the base module, with an alternating succession of male (M) and female (F) zip fasteners having opposite engagement directions.

7. The modularity system according to the preceding claims, characterized in that the rectangular cushions (2) have dimensions which are multiples of the base module so as to be folded for stacking with square cushions.

8. The modularity system according to the preceding claims, characterized in that the cushions comprise a layer of padding, and an air-filled chamber, arranged under said padding layer, to be inflated at the time of use.

9. The modularity system according to the preceding claims, characterized in that it comprises cushions with rigid frames or surfaces inserted therein.

10. The modularity system for padded or inflatable cushions according to any of the preceding claims, comprising a plurality of cushions, selectively combined in order to optimize matching of the zip fasteners and of the cushions, that are selected according to configurations and purposes for which the system is intended.

FIG. 1

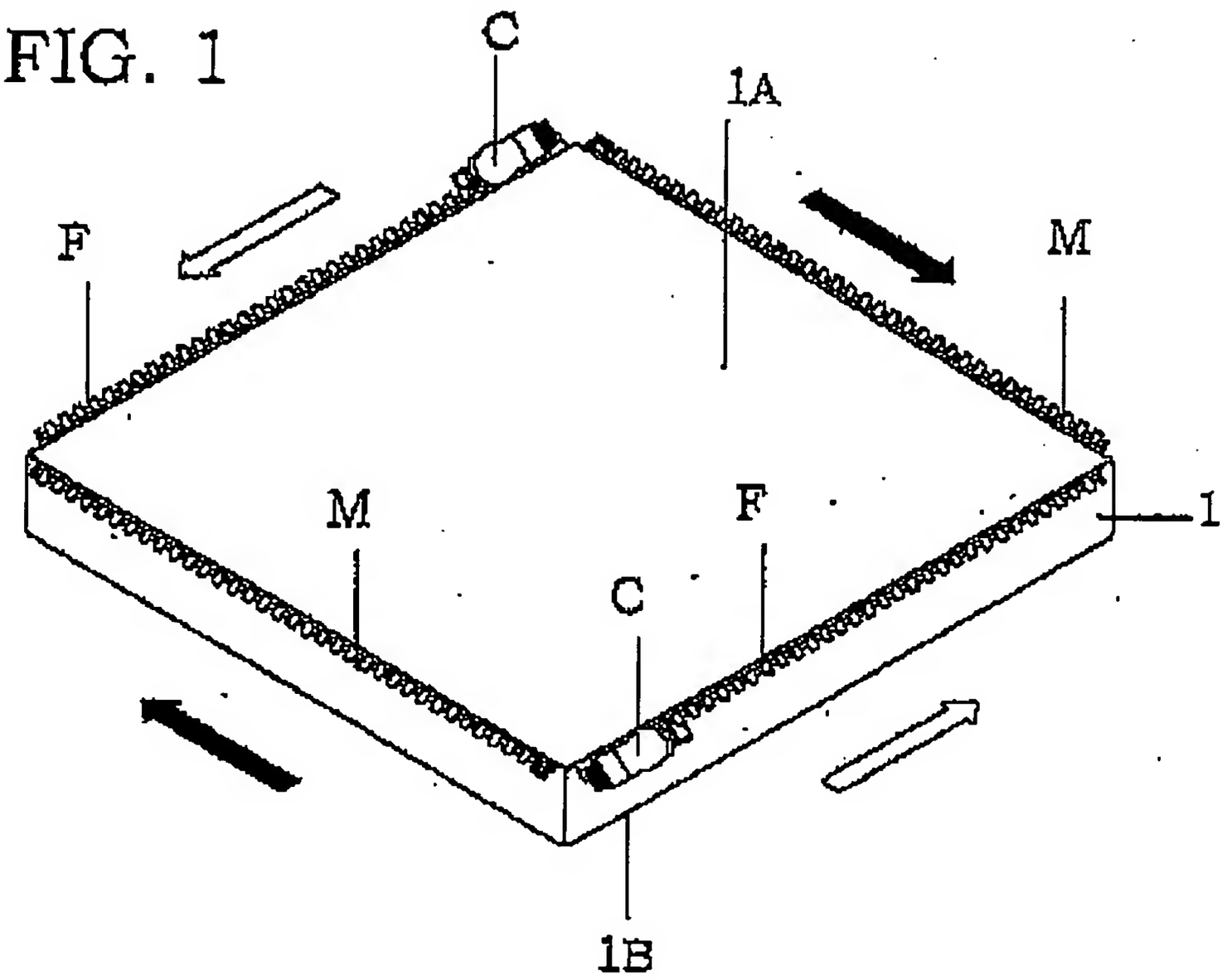
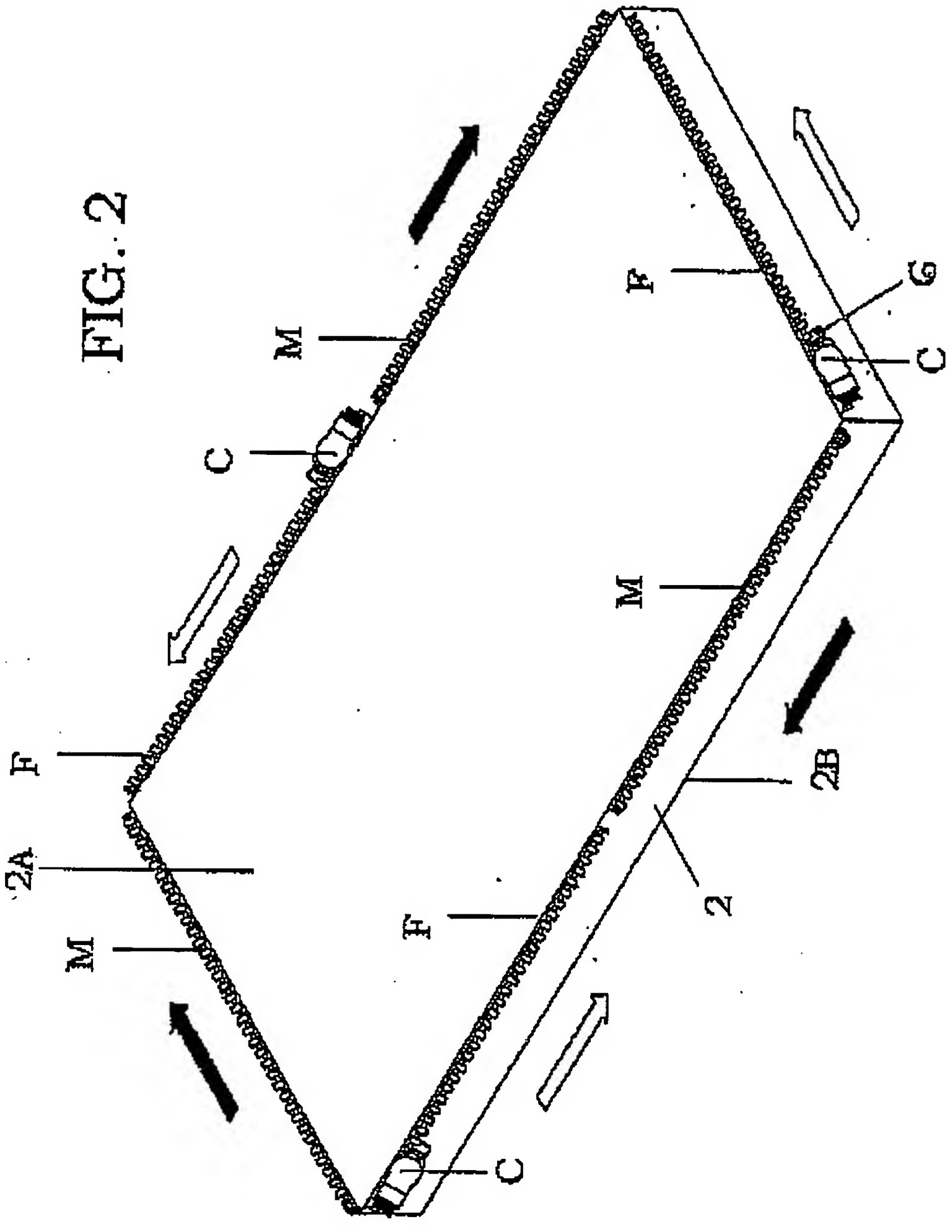


FIG. 2



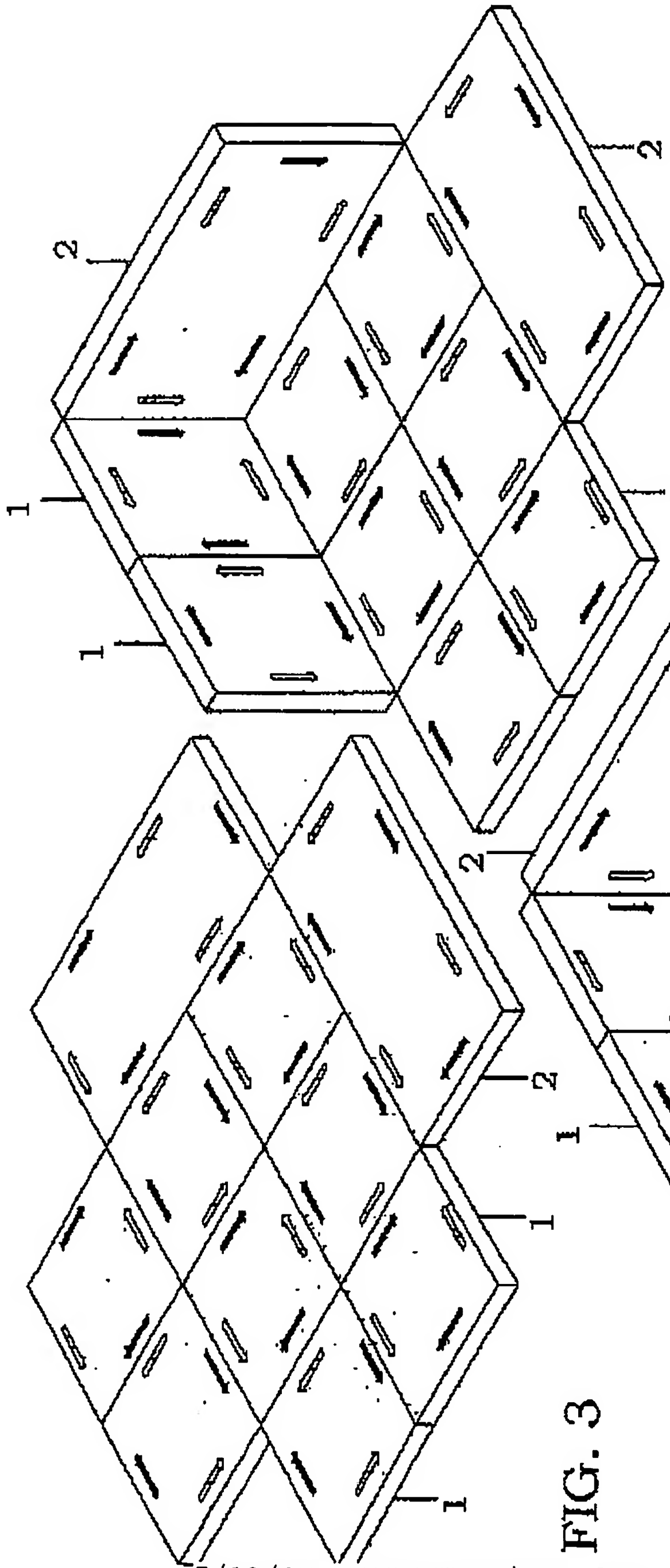


FIG. 4

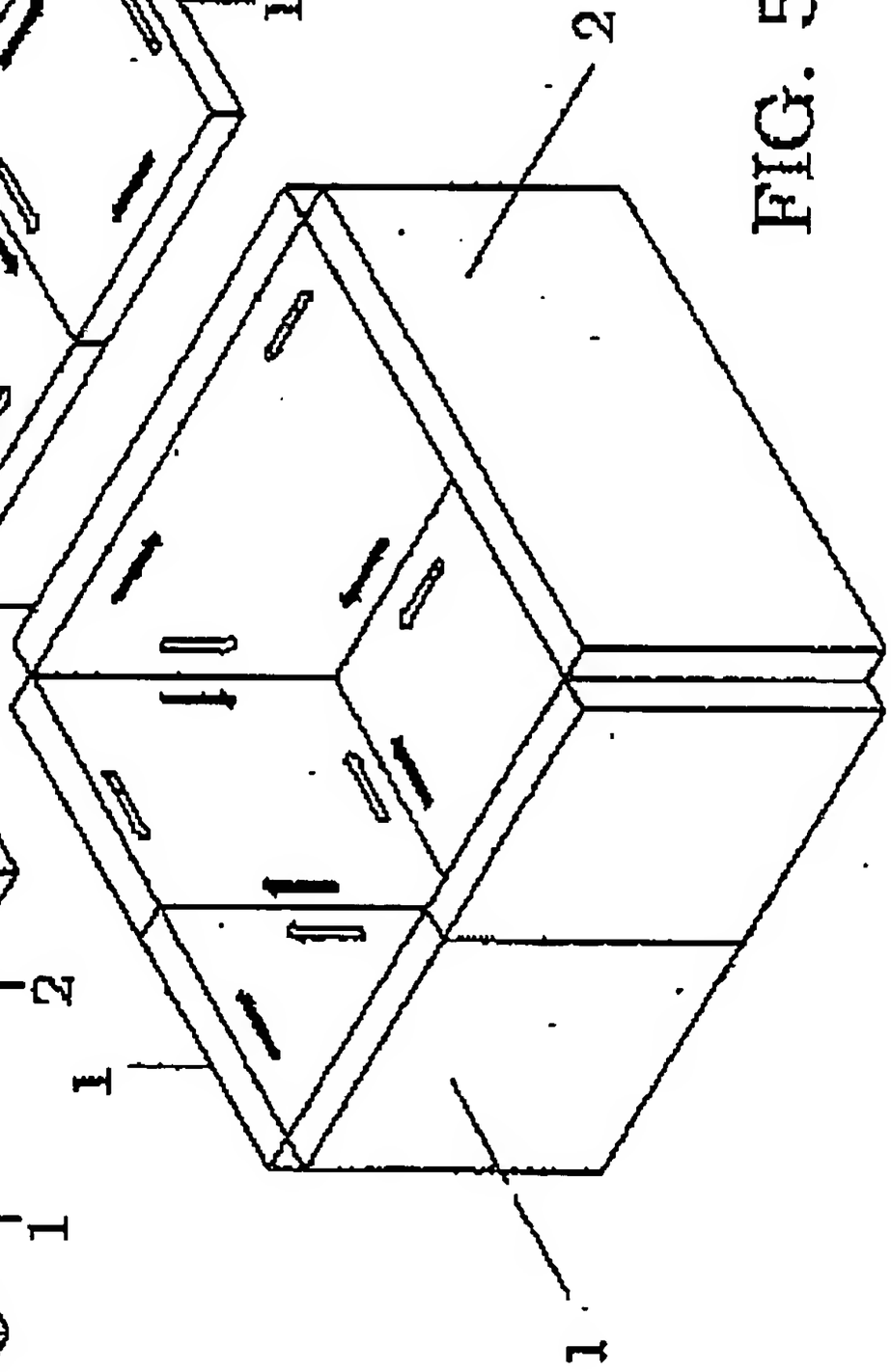


FIG. 5

FIG. 3

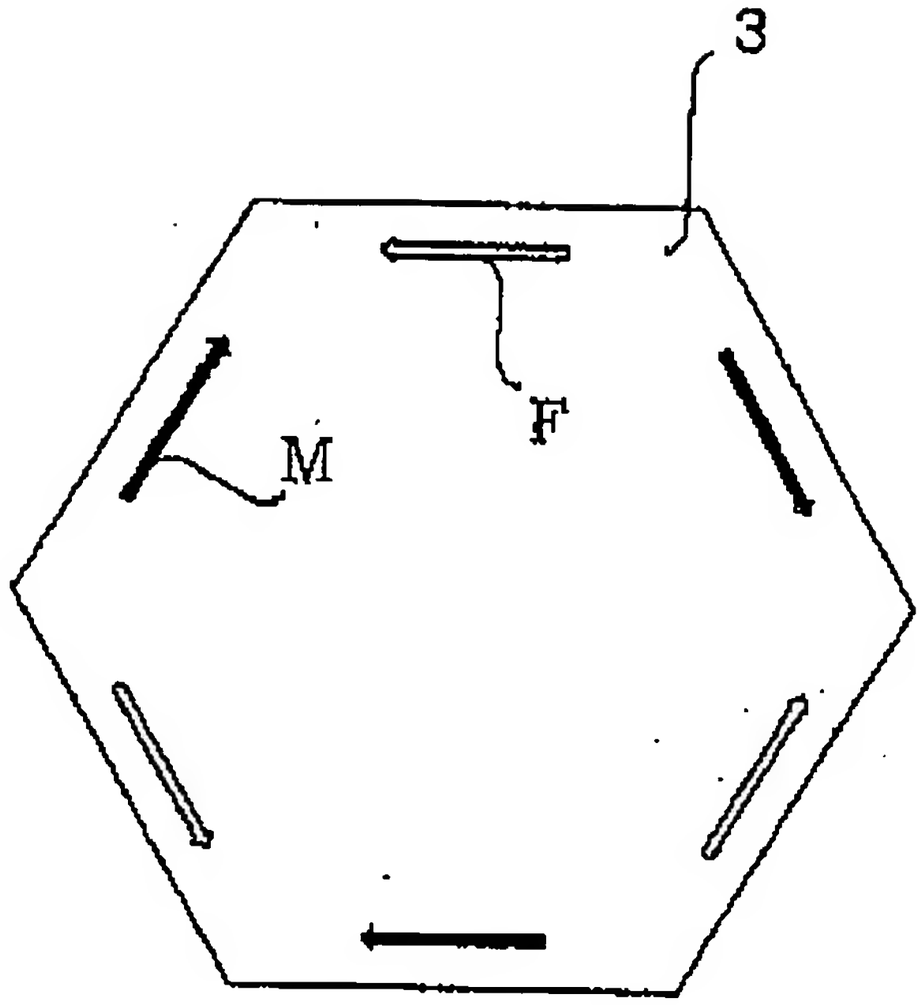


FIG. 6

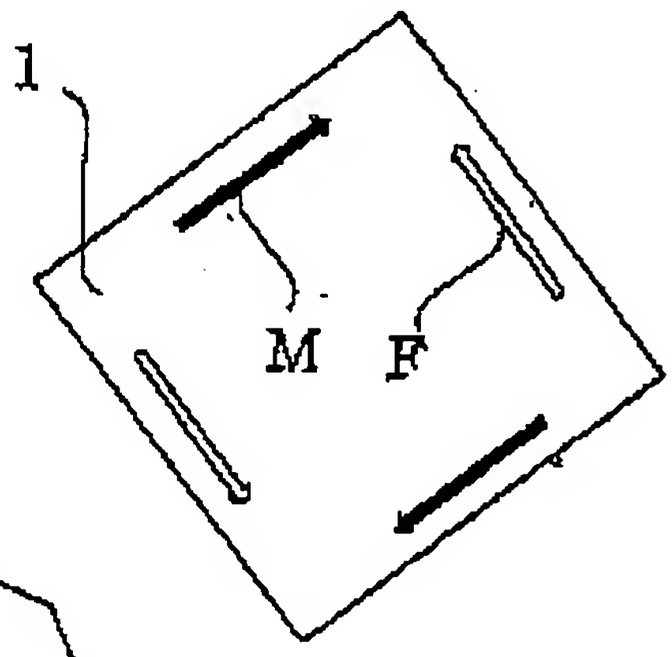


FIG. 8

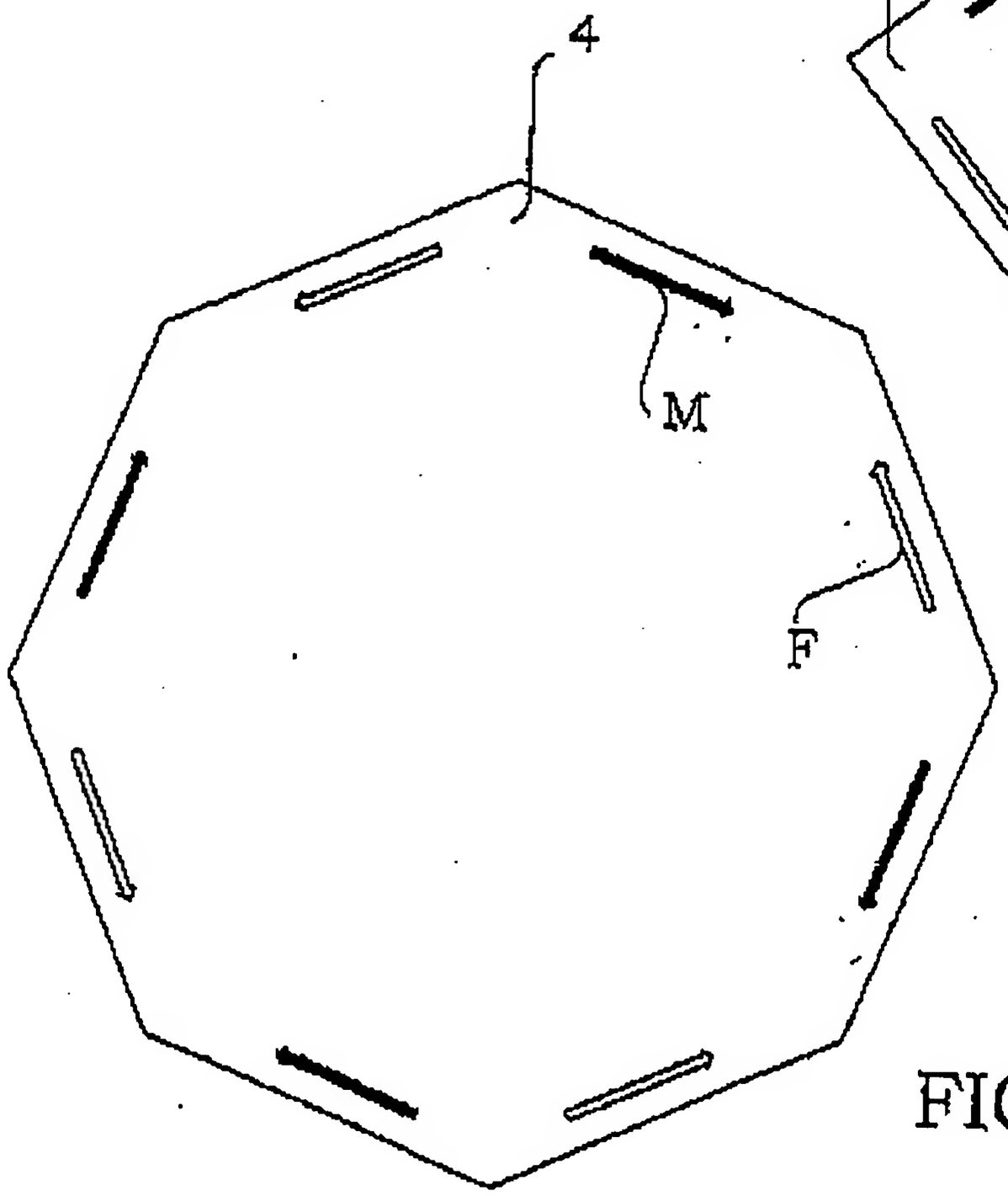


FIG. 7

FIG. 9

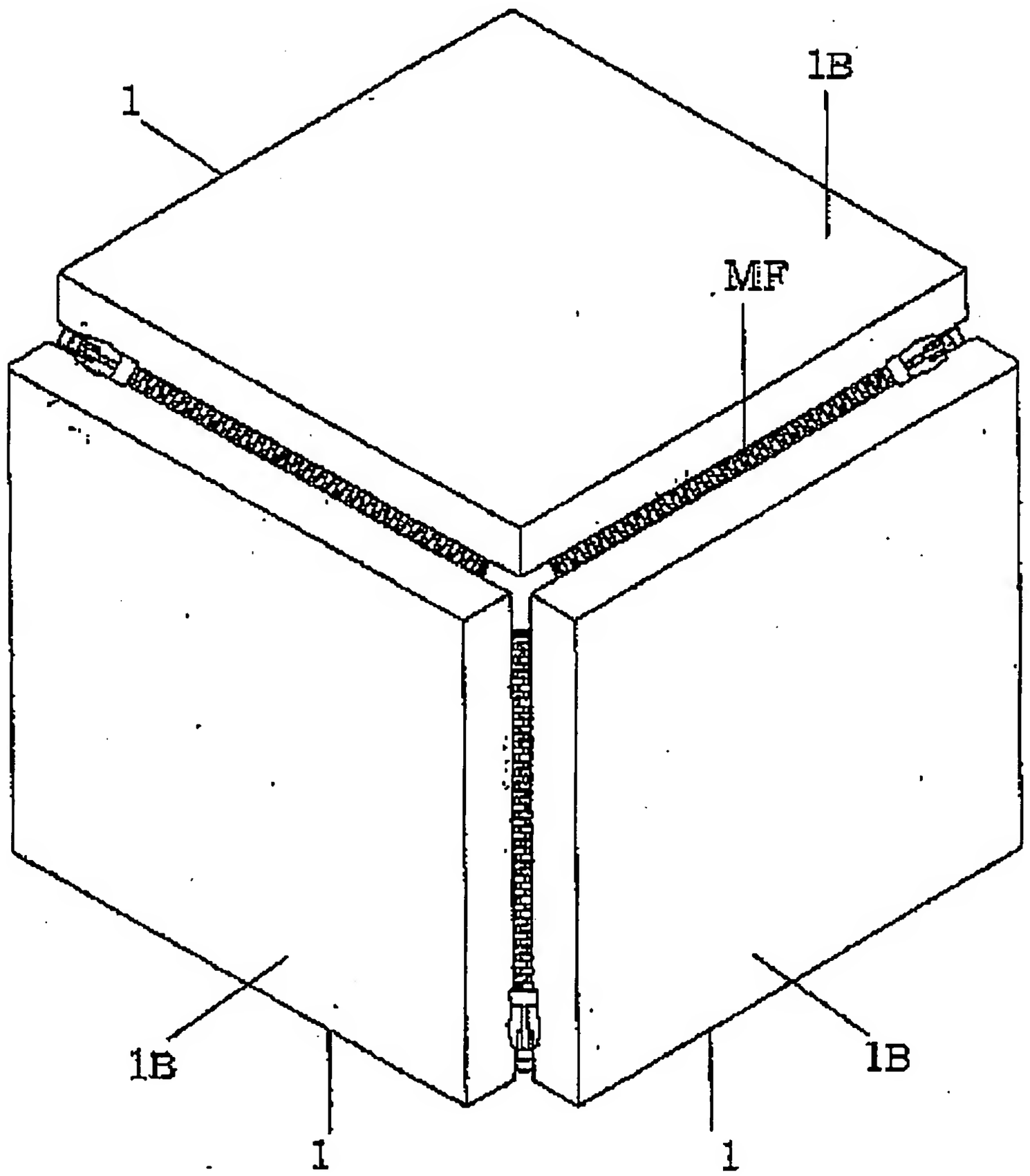


FIG. 10

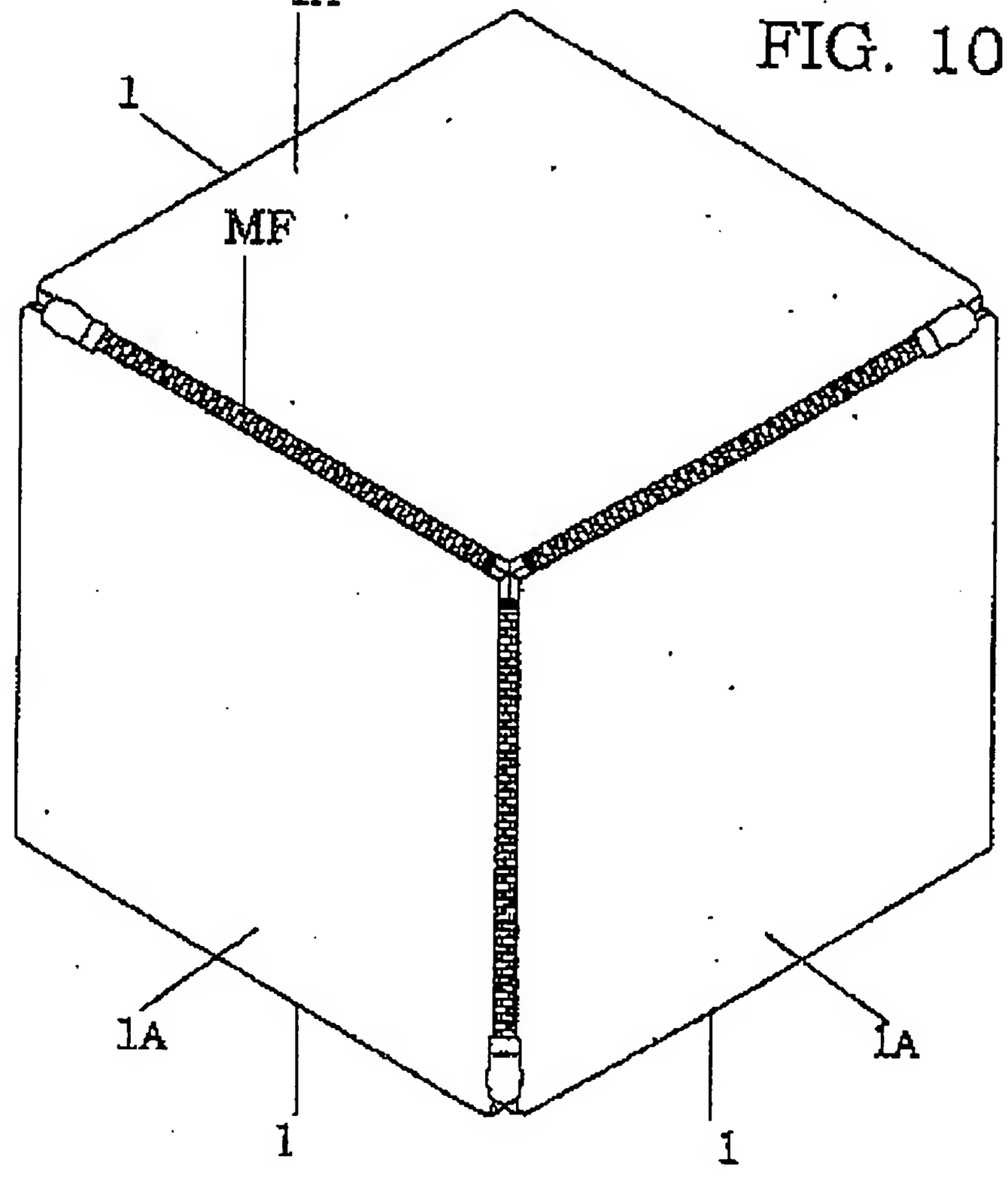


FIG. 11

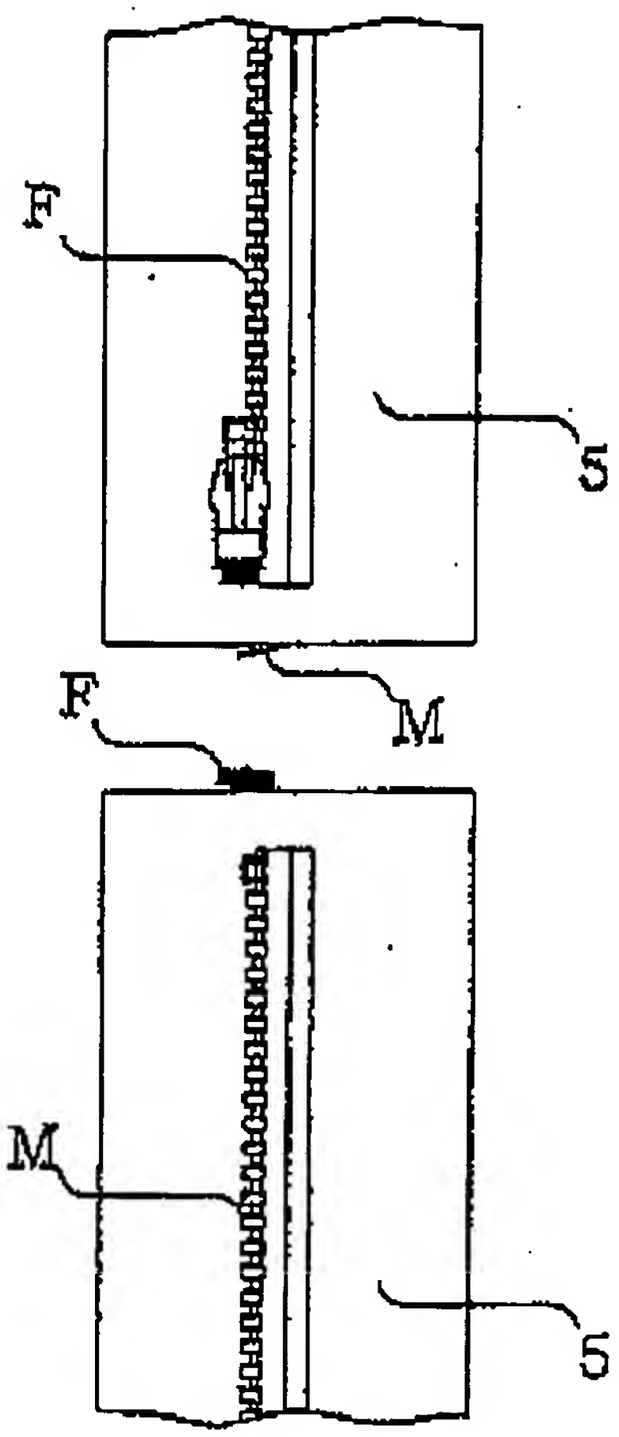


FIG. 12

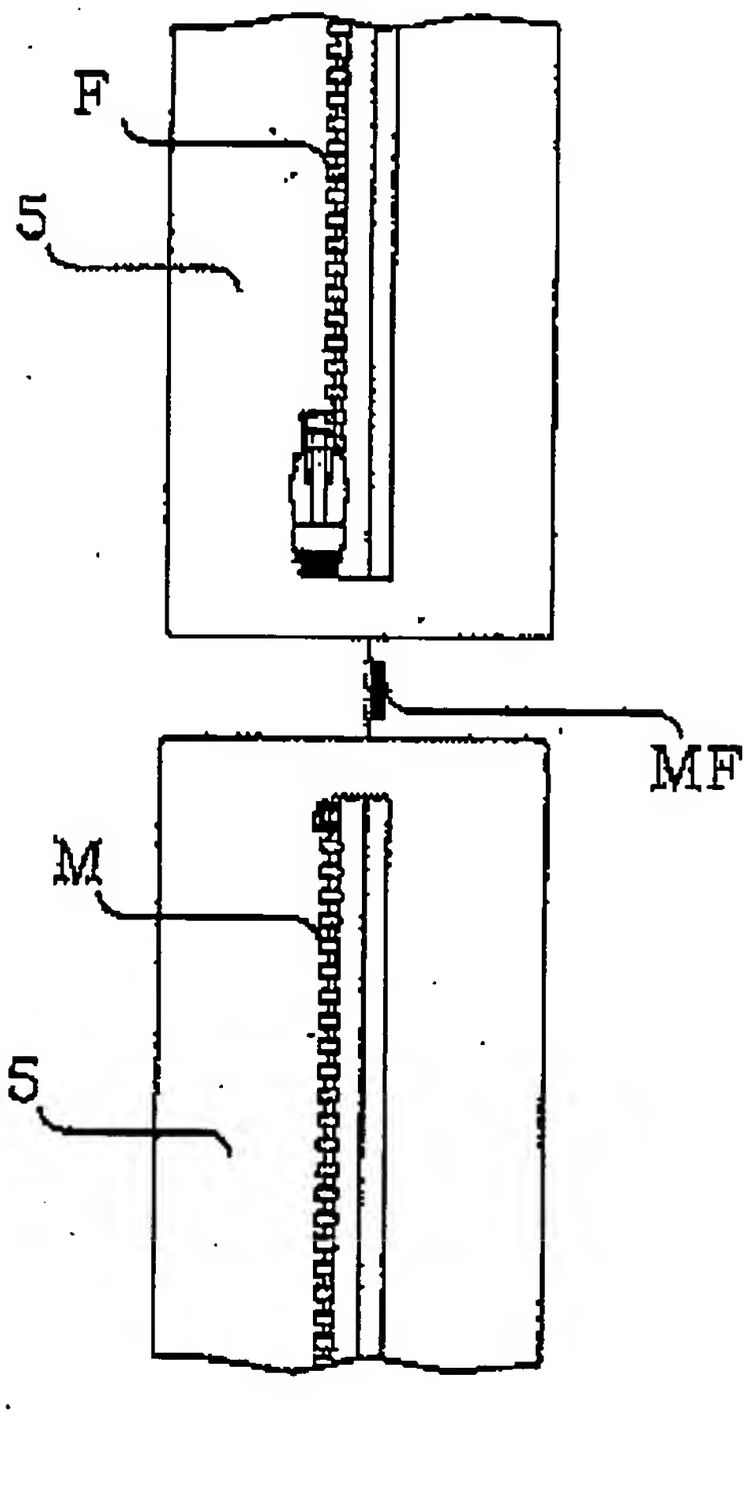


FIG. 13

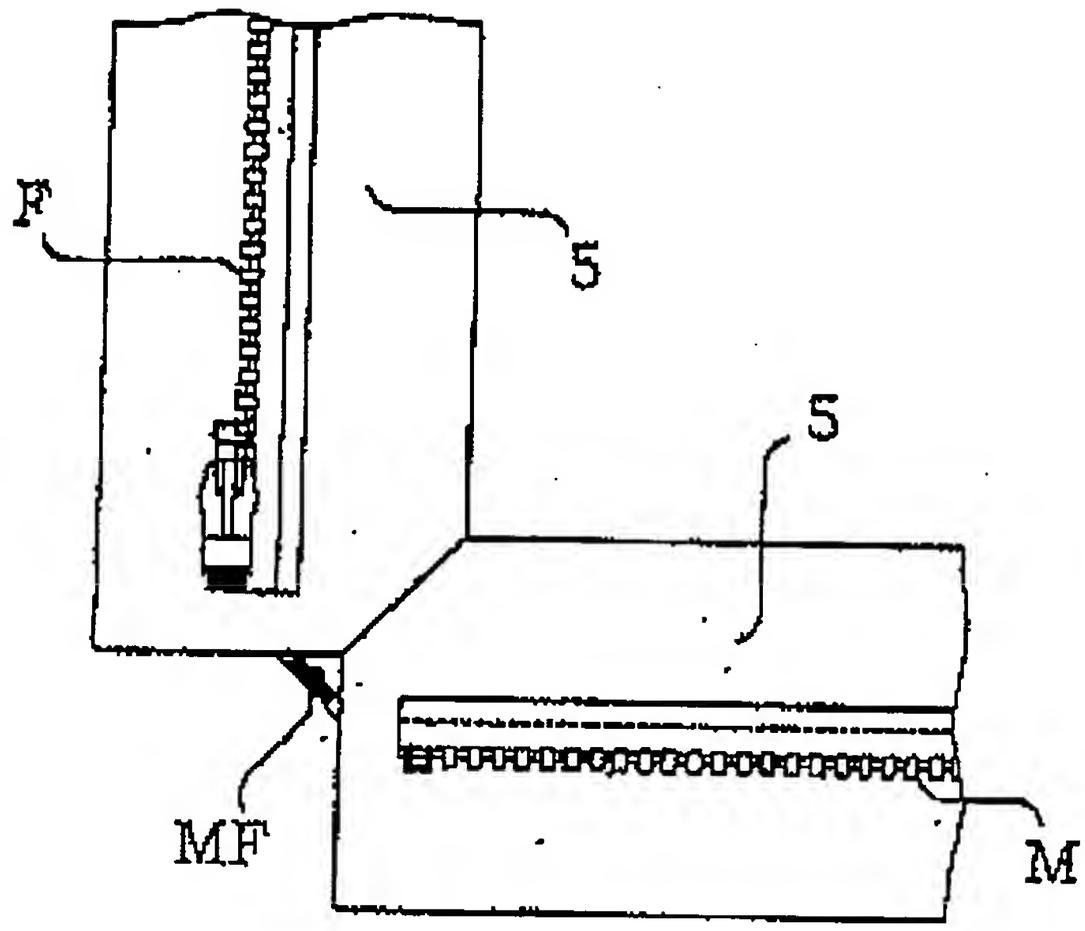
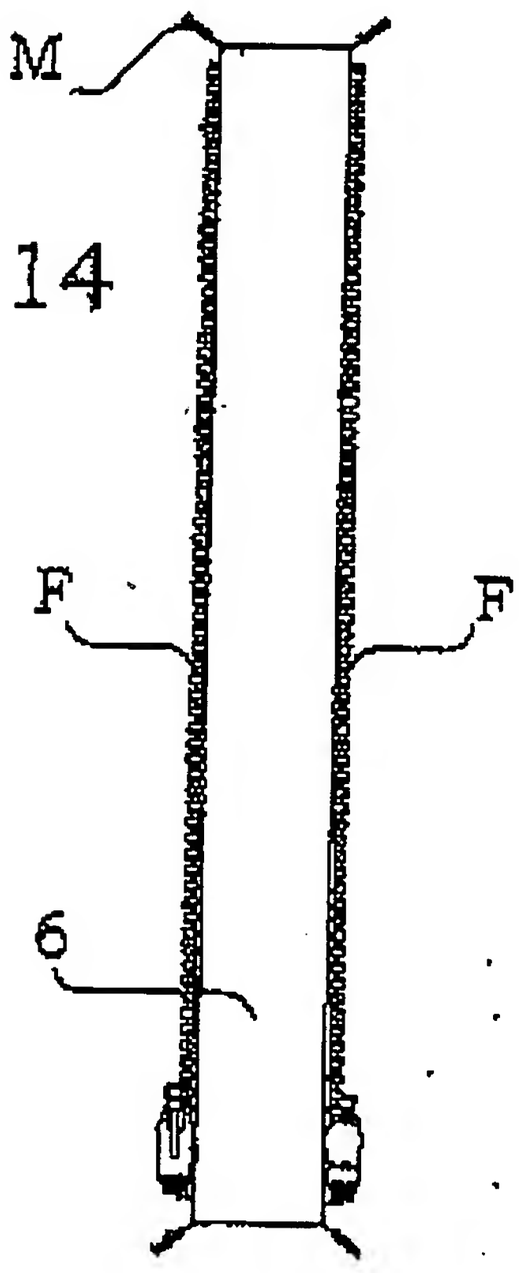


FIG. 14



INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/EP 03/03391

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47D11/00 A47C27/08 B63C9/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47D A47C B63C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 330 379 A (ROH DOUGLAS L ET AL) 19 July 1994 (1994-07-19) column 1, line 45 -column 2, line 63; figures 1-8	1-10
Y	AU 620 122 B (THERESA DAPHNE HILL) 13 February 1992 (1992-02-13) page 5, line 6-19; figures 1-6	1-10
A	US 5 813 172 A (MCNALLY MARK F) 29 September 1998 (1998-09-29) column 1, line 60 -column 2, line 31; figures 1-6	1-7,10
A	US 5 013 273 A (WILLIAMS DANIEL) 7 May 1991 (1991-05-07) column 1, line 59 -column 2, line 29; figures 1-8	1

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
11 August 2003	20/08/2003

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INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/EP 03/03391

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 836 787 A (BOO WILLIAM O J) 6 June 1989 (1989-06-06) column 1, line 44-68; figures 1-8	9

INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/EP 03/03391

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5330379	A	19-07-1994	NONE		
AU 620122	B	13-02-1992	AU	620122 B2	13-02-1992
			AU	3899289 A	01-02-1990
US 5813172	A	29-09-1998	NONE		
US 5013273	A	07-05-1991	NONE		
US 4836787	A	06-06-1989	NONE		